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10/562,123	12/23/2005	Yoshikatsu Tajima	282277US2PC'T	5547
22850 7590 06/25/2009 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER CHAMBERS, TANGELA T				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/562,123

**Applicant(s)**

TAJIMA ET AL.

**Examiner**

TANGELA T. CHAMBERS

**Art Unit**

2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This action is in response to the amendment and arguments filed April 10, 2009.
  - (a) Claims 1, 4, 7-8, 10, 13, 15 and 20 have been amended.
  - (b) Claims 1-21 are pending.

#### ***Specification***

2. **The disclosure is objected to because of the following informalities:**

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested: "MULTI-CHANNEL TRANSMITTER USING AVAILABLE CHANNELS TO TRANSMIT DATA TO A MULTI-CHANNEL RECEIVER".

Appropriate correction is required.

#### ***Claim Objections***

3. **The claims are objected to because of the following informalities:**

Claims 4 and 15 recite the phrase "corresponding to as the predetermined transmission processing" which appears to contain an extra word. It is recommended that the phrase be changed to "corresponding to as the predetermined transmission processing".

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 6-8, 10, 13-14 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walbeck et al, (Walbeck) (US Patent No. 7,310,670 B1), in view of Nuss et al (Nuss) (US Patent Publication No. 2004/0057469 A1).

As per claims 1, 10 and 13, Walbeck discloses:

- ***A radio communication apparatus for use with a multi-channel radio communication system, communicating with other radio communication apparatus of the radio communication system using available channels of the multi-channel,*** (Walbeck, Column 2, Lines 3-9 and Column 37, Lines 47-67, "In one embodiment, the network medium is configured or used as a multi-channel medium.").
- ***a transmitter; a receiver,*** (Walbeck, Column 37, Lines 47-67, "FIG. 20 is a block diagram showing a multi-channel medium 2012 connecting a multi-channel transmitter 2011 to a multi-channel receiver 2013.").
- ***a transmission media-access-control (MAC) unit that divides, when the transmitter transmits data using two or more channels of the multi-channel radio communication system, the data into the two or more channels,*** (Walbeck, Column 37, Lines 47-67 and Column 38, Lines 12-26, "The multi-channel transmitter 2011 provides a separate data output to each channel 2001-2003 and each of the multi-channels 2001-2003 is provided to a separate data input of the multi-channel receiver 2013.").
- ***generates transmission data in correspondence to each of the two or more channels in divided fashion;*** (Walbeck, Column 37, Lines 47-67, "In one embodiment, the multi-channel transmitter 2011 receives a single logical input data stream and separates the input data stream into n data streams, one stream for each of the n channels.").
- ***a radio-frame generating unit that generates a radio frame in correspondence to each of the two or more channels;*** (Walbeck, Column 38, Lines 12-45, "The transmitter 2011 separates the packet 2207 is separated into a plurality of smaller packets 2201-2203 such that: the first smaller packet 2201 is sent over one channel, such as, for example, the first channel 2001; the second smaller packet 2202

is sent over one channel, such as, for example, the second channel 2002; and the n-th smaller packet 2203 is sent over one channel, such as, for example, the n-th channel 2003.”).

- ***a transmission applying-channel notifying unit that inserts channel information to each one of the two or more channels***, (Walbeck, Column 21, Lines 30-47 and Column 38, Lines 27-51, “Typically, the smaller packets 2201-2203 include fields such as length fields, address, fields, payload fields, and error-detection fields[.]”).
- ***wherein the transmitter transmits each radio frame containing channel information***, (Walbeck, Column 38, Lines 27-51, “FIG. 22, comprising FIGS. 22A-22C, shows decomposition of a packet into multiple pieces, the pieces are sent over channels of the multi-channel medium 2012 and reassembled into a received packet at the receiver.”).
- ***a receiving unit that receives two or more channels of divided transmission data and generates reception data by performing a predetermined reception processing on respective radio frames of the two or more channels***; (Walbeck, Column 37, Lines 47-67, “[T]he multi-channel receiver 2013 receives the data from the multi-channel transmitter 2011 on n data streams and combines the received data into a single logical output stream.”).
- ***a reception applying-channel notifying unit that extracts reception data addressed to a local apparatus based on either one of information extracted by the reception processing and or channel information contained in the reception data***; (Walbeck, Column 28, Lines 53-61 and Column 38, Lines 27-51, “The sequence field 907 provides a host application with the ability to recreate or reassemble a data packet or sequence which has been broken up into smaller packets for transmission on the medium 100.”).
- ***a reception media-access-control unit (MAC) that generates a reception frame by reassembling an original transmission frame from the reception data extracted by the reception applying-channel notifying unit***, (Walbeck, Column 37, Lines 47-67 and Column 38, Lines 29-45, “At the receiver 2013, the smaller packets

2201-2203 are reassembled to reconstruct the packet 2207 at the output of the receiver.”).

Walbeck teaches channel information within the payload portion of packets but does not specifically disclose:

- ***identify a corresponding one of the two or more channels***, However, Nuss in an analogous art discloses the limitation. (Nuss, Abstract and Paragraphs [0022]-[0026], “At the packet multiplexer apparatus 210A, the tag inserter unit 211, inserts an identifier tag (e.g., as part of the preamble), onto the packet protocol used to transport each of the channel packets received at an input port 212 of multiplexer apparatus 210A. ... It should be noted that the tag may be used to identify any signal characteristic of the inputted packet signal, such as channel number, signal data rate, signal protocol, etc.”).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Nuss into the teaching of Walbeck to identify a corresponding one of the two or more channels. The modification would be obvious because one of ordinary skill in the art would want the benefit of achieving increased bandwidth efficiency without compromising guaranteed bandwidth associated with individual communication channels. (Nuss, Paragraph [0008]).

As per claims 2-3 and 14, Nuss further discloses:

- ***the transmission applying-channel notifying unit inserts the channel information into an unused area of transmission data generated by the transmission media-access-control unit***, (Nuss, Paragraph [0026], “The present invention utilizes bytes in this unused Physical Layer overhead (in IPG 304 or Preamble 308) to provide a channel identification tag on a packet-by-packet basis.”).

- ***the transmission applying-channel notifying unit inserts the channel information into a preamble of the radio frame***, (Nuss, Paragraphs [0022]-[0026], “[T]he tag inserter unit 211, inserts an identifier tag (e.g., as part of the preamble), onto

the packet protocol used to transport each of the channel packets received at an input port 212 of multiplexer apparatus 210A.”).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Nuss into the teaching of Walbeck to insert channel information into an unused area or the preamble of the radio frame. The modification would be obvious because one of ordinary skill in the art would want the benefit of achieving increased bandwidth efficiency without compromising guaranteed bandwidth associated with individual communication channels. (Nuss, Paragraph [0008]).

As per claims 6 and 18, Walbeck further discloses:

- ***the transmission media-access-control unit checks a reception state of a plurality of channels, and determines the applying channel based on a result of the check,*** (Walbeck, Abstract, Column 6, Lines 10-18 and Column 42, Line 37 - Column 43, Line 63, “Once the multi-channel DACK is received, the process advances to a block 2525 where the multi-channel DACK is examined to extract a channel-specific DACK for each channel. ... Channels where fragments were lost are marked as being bad channels, and channels where fragments were not lost are marked as being good channels.”).

As per claims 7 and 19, Walbeck further discloses:

- ***the channel information includes at least one of an identical frame mark for identifying whether a radio frame received by a receiver is addressed to a local apparatus and applying-channel-number information indicating a channel number of the applying channel,*** (Walbeck, Column 28, Lines 53-61 and Column 43, Lines 29 – Column 44, Line 47, “[T]he source node 2511 send fragments A, B, C, and D on channels 0, 1, 2, and 3 respectively.”).

As per claims 8 and 20, Walbeck further discloses:

- ***the applying-channel-number information includes information indicating a division order of transmission frames generated by the transmission media-access-control with respect to the multi channel radio communication system,*** (Walbeck, Column 43, Lines 29 – Column 44, Line 47, “So for a four-channel system, the receiving node will not see more than a maximum of four sequence numbers out of order.”).

Claims 4-5, 9, 11-12, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walbeck et al, (Walbeck) (US Patent No. 7,310,670 B1), in view of Nuss et al (Nuss) (US Patent Publication No. 2004/0057469 A1), and in further view of Yamaura et al (Yamaura) (US Patent Publication No. 2003/0224731 A1).

As per claim 4, Walbeck further discloses:

- ***the transmission applying-channel notifying unit notifies the channel information to the radio-frame generating unit, when the radio-frame generating unit generates the radio frame using the channel information,*** (Walbeck, Column 21, Lines 30-47 and Column 38, Lines 27-51).

Walbeck teaches inserting channel information into a packet but does not specifically disclose:

- ***the radio-frame generating unit executes a predetermined transmission processing on each transmission data, and uses the channel information for an initial value of a scramble processing corresponding to as the predetermined transmission processing, when generating the radio frame,*** However, Yamaura in an analogous art discloses the limitation. (Yamaura, Paragraphs [0072]-[0076], “The output from 113 enters the scrambler 114, in which pseudo random scrambling is performed according to a prescribed algorithm.”).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Yamaura into the teaching of



Walbeck and Nuss to execute scramble processing on channel information when generating a radio frame. The modification would be obvious because one of ordinary skill in the art would want the benefit of reducing loads in a base station or terminal station when control signals are transmitted from a base station to a terminal station. (Yamaura, Paragraph [0031]).

As per claim 5, Nuss teaches encoding identifying information but does not specifically disclose the following limitations. However, Yamaura in an analogous art discloses:

- ***the radio-frame generating unit includes an encoding unit that encodes the transmission data contained in the radio frame,*** (Yamaura, Paragraphs [0014]-[0015]), Yamaura teaches an encoding unit.
- ***the transmission applying-channel notifying unit inserts the channel information into an encoding-unit initializing section for initializing the encoding unit within the radio frame, and the radio-frame generating unit initializes the encoding unit at a timing when an input of a pattern of the encoding-unit initializing section to the encoding unit is completed,*** (Yamaura, Paragraphs [0072]-[0076], "The output from 114 enters the encoder 115, in which error correction encoding is performed.").

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Yamaura into the teaching of Walbeck and Nuss to encode channel information in a radio frame. The modification would be obvious because one of ordinary skill in the art would want the benefit of reducing loads in a base station or terminal station when control signals are transmitted from a base station to a terminal station. (Yamaura, Paragraph [0031]).

As per claim 9, the combination of Walbeck and Nuss teaches a home local area network and channel information inserted in a preamble but does not specifically disclose the following limitations. However, Yamaura in an analogous art discloses:

- ***the transmitter is a wireless local-area-network transmitter***, (Yamaura, Paragraph [0004]).
- ***the channel information to be inserted into the preamble is a special preamble pattern obtained by inverting a polarity of a part of either one of a short training symbol and or a long training symbol that constitute a preamble of the wireless local-area-network frame***, (Yamaura, Paragraphs [0129]-[0130], [0145] and [0205]), Yamaura teaches inverting the polarity of a wireless local area network symbol.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Yamaura into the teaching of Walbeck and Nuss to invert the polarity of a symbol within a wireless local area network. The modification would be obvious because one of ordinary skill in the art would want the benefit of reducing loads in a base station or terminal station when control signals are transmitted from a base station to a terminal station. (Yamaura, Paragraph [0031]).

As per claim 11, Walbeck teaches processing reception data in order to recreate a data packet or sequence but does not specifically disclose:

- ***the receiving unit executes a descramble processing as the predetermined reception processing, and outputs an initial value extracted by the descramble processing to the reception applying-channel notifying unit***, However, Yamaura in an analogous art discloses the limitation. (Yamaura, Paragraphs [0096]-[0101], "The output from the decoder 258 enters the descrambler 259, which performs descrambling as the inverse conversion of the scrambling performed in the transmitting end. The output from 259 enters the cipher remover 260, which removes cipher made by the transmitting end.").

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Yamaura into the teaching of Walbeck and Nuss to descramble received data when it has been scrambled. The modification would be obvious because one of ordinary skill in the art would want the

benefit of reducing loads in a base station or terminal station when control signals are transmitted from a base station to a terminal station. (Yamaura, Paragraph [0031]).

As per claim 12, Walbeck teaches processing reception data in order to recreate a data packet or sequence but does not specifically disclose:

- ***the receiving unit executes a demodulation processing as the predetermined reception processing, and outputs at least one of a preamble generated by the demodulation processing and data of an encoding-unit initializing section contained in demodulated data to the reception applying-channel notifying unit,*** However, Yamaura in an analogous art discloses the limitation. (Yamaura, Paragraphs [0020]-[0021] and [0100], "The output from the equalizer 255 enters the demodulator 256, which performs signal point judgment and outputs the estimated value of received bit. The output from 256 enters the deinterleaver 257, which performs deinterleaving to rearrange the string of coded bits according to a prescribed rule. The output from 257 enters the decoder 258, which decodes the error correction code given by the transmitting end.").

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Yamaura into the teaching of Walbeck and Nuss to demodulate received data when it has been modulated. The modification would be obvious because one of ordinary skill in the art would want the benefit of reducing loads in a base station or terminal station when control signals are transmitted from a base station to a terminal station. (Yamaura, Paragraph [0031]).

As per claim 15, it is rejected under the same reasons set forth in connection of the rejections of claims 4 and 11.

As per claim 17, it is rejected under the same reasons set forth in connection of the rejections of claims 5 and 12.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walbeck et al, (Walbeck) (US Patent No. 7,310,670 B1), in view of Nuss et al (Nuss) (US Patent Publication No. 2004/0057469 A1), and in further view of Terrier (US Patent Publication No. 2004/0179485 A1).

As per claim 16, Nuss further discloses:

- ***the transmission applying-channel notifying unit inserts the channel information into a preamble of the radio frame,*** (Nuss, Paragraphs [0022]-[0026]).

Walbeck teaches processing reception data in order to recreate a data packet or sequence but does not specifically disclose:

- ***the receiving unit executes a demodulation processing as the predetermined reception processing, and outputs a preamble generated by the demodulation processing to the reception applying-channel notifying unit***

However, Terrier in an analogous art discloses the limitation. (Terrier, Paragraphs [0038]-[0040], "The resulting data from the demodulated and de-scrambled signal is then feed out by synchronous serial interface to MAC 10. The transmission process begins with MAC 10 activating BBP 12 for transmission. BBP 12 generates a Preamble and a Header, then begins to clock the Transmit Data in from BBP 12.")

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Terrier into the teaching of Walbeck and Nuss to output a preamble generated by demodulation processing. The modification would be obvious because one of ordinary skill in the art would want the benefit of achieving expanded channel bit rates with reduced costs and reliable transmission. (Terrier, Paragraph [0017]).

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walbeck et al, (Walbeck) (US Patent No. 7,310,670 B1), in view of Nuss et al (Nuss) (US Patent Publication No. 2004/0057469 A1), in view of Terrier (US Patent Publication No.

2004/0179485 A1), and in further view of Yamaura et al (Yamaura) (US Patent Publication No. 2003/0224731 A1).

As per claim 21, it is rejected under the same reasons set forth in connection of the rejection of claim 9.

### ***Conclusion***

5. The prior art not relied upon but considered pertinent to applicant's disclosure is made of record and listed on form PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TANGELA T. CHAMBERS whose telephone number is 571-270-3168. The examiner can normally be reached Monday through Thursday, 10:00am-6:30pm Eastern Time. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro, can be reached at 571-272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-270-4168.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tangela T. Chambers/  
Patent Examiner, Art Unit 2617

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June 20, 2009

/NICK CORSARO/

Supervisory Patent Examiner, Art Unit 2617